

ABSTRACT OF THE DISCLOSURE

A multi-storage nonvolatile memory of high density, high speed and high reliability has a memory transistor and switch transistors disposed on both the sides of the memory transistor. The memory transistor includes a gate insulating film having discrete traps and a memory gate electrode, whereas the switch transistors include switch gate electrodes. The gate insulating film has the discrete traps for storing information charge, can locally inject carriers, and one memory cell constitutes a multi-storage cell for storing at least information of 2 bits. The switch transistors having the switch gate electrodes realize source side injection. The memory transistor is formed together with the switch transistors in self-aligned diffusion. The memory gate electrode of the memory transistor is connected to a word line so as to perform word-line erase.